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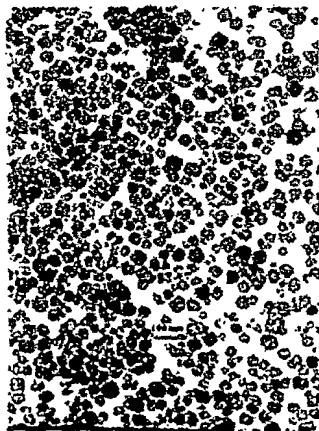
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(54) Title: NANOMETER-SIZED UP-CONVERTING PHOSPHOR FLUORIDE PARTICLES AND PROCESS OF PREPARATION

(57) **Abstract:** Nanometer-scaled up-converting fluoride phosphor particles and processes of making them are disclosed. In the process, an aqueous solution consisting of soluble salts of rare-earth metal ions at a molar ratio of (yttrium, lanthanum or gadolinium): ytterbium:(erbium, holmium, terbium or thulium) = (70-90):(0-29):(0.001-15) is mixed a rare-earth metal chelator and a soluble fluoride salt to form precipitates, which are then annealed at an elevated temperature to produce nanometer-scaled up-converting fluoride phosphor particles. The particle size is between 35nm and 200nm, and can be controlled by the amount of the metal chelator added to the solution. The nanometer-sized particle is applicable to many biological assays.



WO 03/087259 A1

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